In accordance with a further object of the invention, the method includes using a radioactive detection agent and detecting the detection agent with a radiodetector.

In accordance with a further object of the invention, the method includes using a fluorescence detection agent and detecting the detection agent with the fluorometer.

In accordance with a further object of the invention, the method includes detecting qualitatively the presence of the double-stranded DNA.

In accordance with a further object of the invention, the method includes detecting quantitatively the amount of the double-stranded DNA.

In accordance with a further object of the invention, the method includes replicating the double-stranded DNA using PCR.

In accordance with a further object of the invention, the method includes binding the capture agent to a stationary phase.

In accordance with a further object of the invention, the method includes binding the capture agent to a mobile phase.

With the objects of the invention in view, there is also provided a method for simultaneously detecting and capturing a double-stranded DNA sequence complementing a single-stranded RNA sequence. The method includes the following steps. The first step is providing a a single-stranded RNA sequence. The next step is adding a forward primer complementing the single-stranded RNA. The next step is reverse transcripting the single-stranded RNA to produce a double-stranded DNA sequence. The next step is adding a reverse primer for the double-stranded DNA sequence; the forward primer or the reverse primer have a capture agent and the other has a detection agent. The next step is replicating the double-stranded DNA sequence. The next step is binding the capture agent to a capture medium. The next step is rinsing the sample. The next step is detecting the detection agent.

Other features that are considered as characteristic for the invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in a diagnostic polymerase chain reaction utilizing simultaneous capture and detection of amplicons, it is, nevertheless, not intended to be limited to the details shown since various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and method of operation of the invention, however, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments.

DETAILED DESCRIPTION:

The invention is based on all of the normal parameters of a standard PCR or RT-PCR reaction except that the primers are modified for simultaneous capture and detection of the amplified genomic product. The reaction of PCR is based on the replication of genomic material, RNA or DNA, by the use of DNA replicating enzymes [DNA Polymerase +/- Reverse Transcriptase], suitable buffers, Nucleotide Triphosphates [i.e. dATP, dUTP, dGTP, dCTP, dTTP] and Primers.

The process requires the heating of double stranded DNA [dsDNA] to yield the two complementary strands. At this point, the forward and reverse primers attach to their complementary sites on the single stranded DNA upon cooling and the Polymerase attaches to the primer and synthesizes new dsDNA in a 5′ to 3′ direction.

My invention specifically labels one primer with a capture agent such as biotin, digoxin, cellulose binding domain, etc. and the other primer will have a detection agent such as a fluormetric dye, enzyme and substrate, radioisotope, etc. The